1. Programming

Consider the kinds of errors that can occur when you are designing and running a program.

Match the error types to their definitions:

1) A situation in which the program cannot be executed further.
2) A working program that does something different than the user needed.
3) A misspelled or malformed code fragment that prevents the compilation or interpretation of the program.
4) A working piece of code that does something different than the developer intended.

Error types: Runtime Error, Syntax Error, Logic Error, Requirements Error

For each definition, write the matching error type:

1) _____
2) _____
3) _____
4) _____

2. Expressions

Consider the following Java code fragment:

```
int a = 4;
int b = 2;
double c;

a += 3 * b++;
c = a / b;

System.out.println("a = " + a);
System.out.println("b = " + b);
System.out.println("c = " + c);
```

What output does this code produce?

a = _____
b = _____
c = _____

(1 point per correct answer; max. 3 points)

3. Selections

Complete the following Java program so that it
- reads two integer values from the keyboard
- divides the larger value by the smaller value, and prints the result
- unless the smaller value is 0, in which case the program shall print "undefined".

Complete the program (changes are saved automatically):

Test cases (for your reference):

#	input	expected output
1	42 6	7
2	42 0	undefined
3	7 42	6
4	0 42	undefined
5	0 -2	0
6	-4 0	0

(You only need to write the program code.)

4. Strings

Consider the variable String s = "Hello!".

Select all expressions that evaluate to true (mark all that apply):

[ ] "Hello!".equals(s)
[ ] s.length = 6
[ ] s.indexOf('H') == 1
[ ] s.length() == 6
[ ] s.indexOf('!') == s.length()
[ ] s.charAt(1) == 'e'

(1 point per correct answer, -1 point per incorrect answer;
min. 0 points, max. 3 points)

5. Loops

Consider the following Java code fragment:

```
while (i != j) {
    System.out.println(i++);
}
```

How often will the loop be executed if the variables are initialized as follows?
(Circle or write the correct choice for each case.)

Options: never, 2 times, 3 times, 4 times, millions of times

1) int i = 3; int j = 1; _____
2) char i = 'a'; char j = 'd'; _____
3) int i = 1; int j = 3; _____
4) int i = 3; int j = 3; _____

(1 point per correct answer; max. 4 points)

6. Methods

Complete the following Java program so that
- it reads three integer values a, b and c from the keyboard
- it passes them to a public static method checkSum
  (to be written by you according to the given Javadoc specification)
- if checkSum returns true, the program prints "correct", otherwise "incorrect".

Complete the program (changes are saved automatically):

Example test cases (for your reference):
Test case 1: input 40 2 42 -> expected output: correct
Test case 2: input 20 20 42 -> expected output: incorrect

7. Arrays

Write a Java program that
- reads ten integer values into an array
- calculates their average
- prints all array values that are greater than the average (in the order they had been entered).

Complete the program (changes are saved automatically):

Example test case (for your reference):
Input: 48 5 29 9 58 24 41 31 97 98
Expected output: 48 58 97 98